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THE URAL-49 RADIOPHONOGRAPH

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The Ural-49 radiophonograph is a table model, consisting of a 6-tube superheterodyne receiver and phonograph mounted in the same cabinet. The receiver has the following bands: long wave, 2,000-715 meters (150-410 kilocycles); medium wave, 540-200 meters (520-1,500 kilocycles); short wave, 68-19 meters (4,500-15,500 kilocycles). The intermediate frequency is 465 kilocycles.

The set uses the following tubes: a 6SA7 as a converter, a 6SK7 as an IF amplifier, a 6G7 as a detector and audio amplifier, a 6V6 as the final amplifier, a 6E5 electron-ray tube as a tuning indicator, and a 5Ts4S as a full-wave rectifier.

Other features of the set include inductive coupling of the antenna to the input circuit, use of a ceramic condenser in the oscillator circuit to provide temperature compensation on the short-wave band for better frequency stability, employment of only one diode of the 6G7 (the other being grounded), and undelayed automatic volume control.

In the final stage of the Ural-49 set, unlike the Ural-47, the 6V6 tube is supplied with automatic bias in the cathode circuit. Negative feedback is supplied from the plate of the 6V6 tube to its control grid through an RC circuit. The negative feedback greatly reduces the nonlinear distortion, and, in addition, by proper selection of the RC values, the frequency characteristic may be corrected within wide limits.

An outlet from part of the primary winding of the output transformer is provided for an additional speaker. Any loudspeaker designed for the wired radio network can be connected to this outlet.

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The rectifier is of the full-wave type and does not use a special filter choke. The output tube is fed directly, while the remaining tube voltages are applied through a smoothing resistor and part of the primary winding of the output transformer which serves to eliminate AC hum.

Construction

Many changes have been made in the construction of the Ural-49, as compared with the earlier Ural-47 model. In the first place, the outward appearance of the Ural-49 is greatly improved. The control knobs have been replaced by more convenient and better looking ones. The Ural-49 is mounted on one chassis instead of the two separate chassis (for receiver and power supply) of the Ural-47. This simplifies both assembly and mounting. Changes in the construction of the dial mechanism have decreased wear on the dial cable drive in the new set.

The Ural-49 comes in a polished veneer cabinet with a hinged upper cover which houses the turntable, a Type SM-1 synchronous motor, and a Type AM electromagnetic pickup. The dimensions of the case are 530 x 290 x 373 millimeters.

The set has five control knobs, four of which are located on the front panel, while the fifth, for tuning, is on the right-hand side. The dial is vertical and rectangular. The electric eye tuning indicator is located on the upper left part of the dial.

The set has a Type 2GDM-3 dynamic loudspeaker with a permanent magnet and 200-millimeter cone diameter. Its nominal power is 3 volt-amperes.

Technical Data

The Ural-49 is designed to operate on AC line power at 110, 127, and 220 volts. The receiver consumes 80 watts alone, and 100 watts with the phonograph switched on. Its nominal power output is 2 watts for nonlinear distortion less than 7 percent.

Its selectivity curve drops off not less than 26 decibels when the signal is detuned plus or minus 10 kilocycles. Attenuation of the image channel in the long-and intermediate-wave bands is not less than 26 decibels, while in the short-wave band, it is not less than 12 decibels.

The over-all frequency pass band, including speaker, is 100 to 4,000 cps for 20 decibels variation. The pass band for the phonograph (audio stage, pickup, and speaker) is 90-4,000 cps. The frequency response curves were plotted according to sound pressure.

The frequency deviation of the oscillator, after the first 15 minutes of operation, is 0.6 kilocycles for the higher frequencies of the long-wave and intermediate-wave bands, and 6.18 kilocycles at the highest frequency of the short-wave band.

The changes made by the factory have improved the circuit and design of the Ural-49, as compared with the Ural-47 model. However, the designers overlooked certain technical details. For example, they might have introduced automatic starting of the turntable motor and automatic shutoff at the end of the record.

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